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INCH-POUND

MIL-PRF-83830B
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SUPERSEDING
MIL-PRF-83830A
20 July 2004

PERFORMANCE SPECIFICATION

TRUCK, FORKLIFT, ROUGH TERRAIN, DIESEL ENGINE DRIVEN, 25,000 POUND CAPACITY AT A 48 INCH LOAD CENTER

This specification is approved for use by the Department of the Air Force and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE.

1.1 Scope. This specification describes a 25,000 pound, diesel engine driven, rough terrain, four wheel drive pneumatic tired forklift truck (hereinafter called the truck) with two/four wheel steer (rigid frame) or articulated frame steering.

2. APPLICABLE DOCUMENTS.

2.1 General. The documents listed in this section are specified in section 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3 and 4 or this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards and handbooks. The following specifications, standards and handbooks form a part of this document to the extent specified herein. Unless otherwise specified (see 6.2), the issues of these documents are those cited in the solicitation or contract.

Comments, suggestions, or questions on this document should be addressed to WR-ALC 542 CSW/CBSG, 295 Byron Street, Robins AFB, GA 31098-1611. Since contact information can change, you may want to verity the currency of this address information using the ASSIST Online database at http://assist.daps.dla.mil.

AMSC N/A FSC 3930

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FEDERAL STANDARDS

FED-STD-595/24052 Forest Green
FED-STD-595/30313 No Gloss Tan

COMMERCIAL ITEM DESCRIPTIONS

A-A-52557 - Fuel Oil, Diesel; For Posts, Camps and Stations.
A-A-59295 - Corrosion Preventative Compounds, Cold Application.

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-PRF-83282 - Hydraulic Fluid, Fire Resistant, Synthetic Hydrocarbon Base
MIL-DTL-83133 - Turbine Fuels, Aviation, Kerosene Types, NATO F-34 (JP-8), NATO F-35, and JP-8+100 (NATO F-37)

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-209 - Slinging and Tiedown Provisions for Lifting and Tying Down Military Equipment
MIL-STD-461 - Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems and Equipment

DEPARTMENT OF DEFENSE HANDBOOK

MIL-HDBK-1791 - Designing for Internal Aircraft Delivery in Fixed Wing Aircraft

(Copies of Department of Defense and Federal documents are available online at http://assist.daps.dla.mil/quicksearch/ or http://assist.daps.dla.mil or from Standardizations Documents Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.\

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)
AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI/ITSDF B56.1 Safety Standard for Low Lift and High Lift Trucks
ANSI/ITSDF B56.6 Safety Standard for Rough Terrain Forklift Trucks
ASME Boiler/Pressure Vessel Code Section IX - Qualification Standard for Welding/Brazing Procedures, Welders, Brazers, & Welding & Brazing Operators

(ASME/ANSI documents may be obtained at www.asme.org or from American Society of Mechanical Engineers, P.O. Box 2900 Fairfield NJ 07007)

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AMERICAN WELDING SOCIETY (AWS)

AWS B2.1/B2.1M – Specification for Welding Procedure and Performance Qualification

(Application for copies should be addressed to the American Welding Society, 550 N.W. LeJeune Road, Miami, Florida 33126)

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)

SAE J98 - Personnel Protection for General Purpose Industrial Machines
SAE J386 - Operator Restraint System for Off-Road Work Machines.
SAEJ/ISO3411- Earth-moving machinery Human physical dimensions of operators and minimum operator space envelope.
SAE J925 - Minimum Service Access Dimensions for Off-Road Machines Standard.
SAE J985 - Vision Factors Considerations in Rearview Mirror Design
SAE J994 - Alarm – Backup – Electric Laboratory Performance Testing, Standard.
SAE J1176 - External Leakage Classifications for Hydraulic Systems, Recommended Practice

(Copies should be obtained from the Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096).

UNDERWRITERS LABORATORIES INC. (UL).

UL 558 - Standard for Industrial Trucks, Internal Combustion Powered

(Copies should be obtained from Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062).

TIRE & RIM ASSOCIATION

Tire & Rim Association Yearbook

(Copies should be obtained from the Tire & Rim Association, Inc., 3200 West Market Street, Akron, OH 44313).

2.4 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

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3.1 Description. The truck shall be diesel-engine-driven, four wheel drive, rough terrain type forklift. It shall have operator selected 2-wheel, 4-wheel, and crab steering, or shall have an articulated frame.

3.2 First article test. When specified, (see 6.2), the contractor shall furnish one complete truck for first article inspection and demonstration and test in accordance with (see 4.2 and 4.3) of this document. The truck shall be a pre-production unit that shall be identical to all trucks produced on this contract. If the contractor determines it is necessary to make configuration changes during production, pre-approval must be obtained from WR-ALC 542 CSW/CBSG. All testing shall be observed and approved by Government representatives. The approved first article truck shall be refurbished to a like new condition and delivered as soon as possible.

3.2.1 First article report. The first article inspection report shall include a detailed description of the inspection (see 4.2) and demonstration and test (see 4.3) performed. The report shall be submitted in digital format, and every effort shall be made to keep the file size reasonable while maintaining image quality. All deficiencies encountered and actions taken to correct the deficiencies shall be included in the report. Approval of the first article test report shall not relieve the contractor of his responsibility to furnish trucks that meet the requirements of this document.

3.3 Materials. Shall be as specified herein. Materials not specified shall be selected by the contractor and shall be subject to all provisions of this specification.

3.3.1 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs. The offerer/contractor is encouraged to use recovered materials to the maximum extent practicable, in accordance with 23.403 of the Federal Acquisition Regulation (FAR). However, used, rebuilt, or refurbished items shall not be incorporated in the truck.

3.3.2 Dissimilar metals. Unless suitably protected against galvanic corrosion, dissimilar metals shall not be in intimate contact with each other.

3.3.3 Drain holes. Structures shall be designed to eliminate pockets where debris and water might accumulate. All structural configurations shall allow water run-off, or shall have adequate sized and placed drain holes.

3.4 Operation. Trucks described herein are primarily intended for stacking, unstacking, and moving 20-foot International Standards Organization (ISO) containers, palletized loads and other large cargo. Operations will include, but not be limited to, loading and unloading flatbed trailers, loading docks, and C-130, C-17, and C-5 aircraft. The truck will operate on hard paved surfaces, unprepared natural ground, rough terrain, mud, and soft sand. Traveling at maximum speed between work sites as far as five miles apart, both fully loaded and unloaded, is also required.

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3.4.1 Operating temperature. The truck shall be capable of operating in temperatures ranging from 0° F to +125° F. The truck, with type C winterization system (see 3.20.2), shall be capable of operating in temperatures ranging from –25° F to +125° F. The truck, with type A winterization system (see 3.20.1), shall be capable of operating in temperatures ranging from –65° F to +125° F.

3.5 Design. The truck shall be designed for at least 25,000 pound capacity at 48 inch horizontal and vertical load center, with the forks at the maximum lift height of the truck and with the forks tilted to extreme forward position and with the load side shifted to extreme right and left positions. Trucks covered by this document and components incorporated therein shall conform to accepted commercial design practices. Trucks shall be constructed and equipped to meet all requirements specified herein. Component parts of the unit need not be products of the same manufacturer. However, the manufacturer shall be so established that prompt and continuing service and delivery of repair parts will be assured. The truck shall be equipped with all other components and parts not specifically mentioned but necessary to provide a functional machine and shall conform in quality to that normally provided to the commercial industry.

3.6 Safety. The truck shall conform to the applicable requirements of ANSI/ITSDF B56.6, UL 558, SAE J98, and OSHA standards in effect at the time of issue of the manufacture. The trucks shall be DS rated according to UL 558. All surface areas subject to personnel standing or walking shall have a nonskid, tread-plate, or expanded metal surface. If necessary to assist in cab entry, a grab handle and steps shall be provided on the exterior of the cab. All rotating and reciprocating parts and parts subject to high temperature shall be guarded when such parts are exposed to contact by operator and maintenance personnel performing daily maintenance functions. There shall be no sharp edges on surfaces. Nonfunctional edges shall be rounded, projecting points shall be blunted or rounded, and excessive length of fasteners shall be avoided.

3.6.1 Seat belt. An operator's seat belt with a retractor shall be installed on the truck. The seat belt must conform to SAE J386, Type 1. However, the installation of a lap belt alone will not be considered as adequate occupant restraint. Additional restraint devices designed to ensure the operator's body remains entirely within the protection of the frame and overhead guard in the event of tip over will also be provided. The restraint system shall not interfere with operator access or mobility, or the vehicles operation. (i.e. special seat, shoulder belt, etc.) A warning decal shall be provided advising of the hazards of tip over and the importance of using the restraint system.

3.6.2 Fire extinguisher. A commercial fire extinguisher shall be mounted on the truck in an easily accessible location. The fire extinguisher shall be a minimum 2 ½ pound capacity ABC type or equivalent. The fire extinguisher shall be UL listed.

3.6.3 Horn. The manufacturer's standard horn shall be provided.

3.6.4 Backup alarm. An audible backup alarm shall be furnished. The alarm shall automatically activate when the transmission selector is placed in reverse. The backup alarm must conform to SAE J994.

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3.7 Human factors. The truck shall provide for operation and maintenance by personnel ranging from small person normally clothed, through large person arctic clothed, in accordance with SAE J/ISO 3411 and SAE J925. This shall include, but not be limited to all travel, load motion, and steering controls; entry to the operator's seat and access to all fluid level check points.

3.8 Structure.

3.8.1 Chassis and frame. The frame and related structure shall be capable of withstanding 300 percent of rated load without permanent deformation, evidence of cracks, or structural failure of the frame, body assembly, and all connecting parts. Frame members, bracing, and all their joints shall provide a rigid unit structure. The frame and related structure shall not crack, deform, or fail under the testing specified in Section 4 of this document.

3.8.2 Fork lifting overload. The fork lifting mechanism shall be capable of withstanding 125 percent of rated load and cycled through the extreme ranges of motion 50 times. Any permanent deformation, over-heating, malfunctions, leakage, binding, jerking, uneven operation, wearing, galling or gouging shall be cause for rejection.

3.8.3 Operator's overhead guard. An overhead guard shall be furnished. The overhead guard shall meet all of the requirements of ANSI/ITSDF B56.6 including falling object protective structure (FOPS) and inside clearances.

3.8.4 Welding. All welds shall be smooth, continuous, with complete heat penetration and shall transmit stress without permanent deformation or failure when the truck is subjected to normal service and the testing in section 4 of this specification. The contractor's welders, welding operators and welding procedures shall be qualified to meet the welding requirements of the AWS B2.1/B2.1M or ASME Boiler/Pressure Vessel Code Section IX.

3.9 Rated load. The rated load shall be a 25,000 (+100, -0) pound cube, 96 inches on each side with a center of gravity located at the geometric center of the cube.

3.10 Engine. The truck shall be powered with a standard commercial diesel engine. Horsepower and torque characteristics shall be sufficient to provide the performance specified herein. Engine torque and horsepower shall be provided at an RPM which will assure performance with an adequate margin of safety. Emergency manual shutdown provisions shall be furnished when recommended by the engine manufacturer. The diesel engine shall operate on diesel fuel in accordance with A-A-52557. Either the engine or forklift manufacturer shall certify that the engine is capable of operating on JP-8 and JP-8/SPK conforming to MIL-DTL-83133 for 400 hours, during normal commercial or military situations, without detrimental effect on the engine. Some power loss is expected, but the forklift shall be able to perform normal operations. A certification letter should be included in the first article test report. An example of a previous certification letter is shown in Figure 1.

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3.11 Fuel tank. The capacity of the fuel tank shall be adequate to allow at least 10 hours of continuous operation as defined in section 4. If the fluid level of the tank is above the engine, the tank shall be provided with a hand-operated fuel shutoff valve attached directly to the tank. The fuel tank cap shall be approved DS cap. A data plate shall be furnished near the fill pipe marked "Diesel Fuel" in not less than 1-inch high letters. The tank filler neck shall be designed to operate with an OPW (www.opw-fc.com) fuel nozzle model 295AF. The dimensions for the OPW 295AF are available on their web site.

3.12 Engine exhaust. The exhaust system shall incorporate a muffler, and shall terminate at a location clear of the operator's station. A means shall be furnished to prevent rain water intrusion into the exhaust system. Muffler and exhaust piping shall conform to the requirements of UL 558.

3.13 Transmission. The transmission shall be the full torque, power-shift type in combination with a torque converter. The transmission shall provide at least two forward and two reverse speeds. Selective forward and reverse directional controls activated by the operator's foot are not acceptable. The transmission shall provide for positive inching or declutch control throughout the entire engine rpm range, in both forward and reverse directions. The inching or declutch control shall permit lifting of rated load, at maximum engine speed, while the transmission is in a forward or reverse gear, with no vehicle motion. When specified (see 6.2) a transmission oil cooler shall be furnished.

3.14 Steering. The steering system shall provide positive hydraulic power steering control of the truck at all speeds and during all operations. For rigid frame trucks, the system shall provide the operator the option of two-wheel, four-wheel, and crab steer. Articulated frame trucks shall provide articulated frame steer. In the event of a power failure, the forklift shall be equipped with an emergency power steering mechanism. This supplemental power steering mechanism shall allow the vehicle to be controlled while moving.

3.15 Hydraulic system. The hydraulic system shall consist of all hydraulic components necessary for operation of the forklift, including a filter. All hydraulic hoses shall have a working pressure equal to or greater than the hydraulic system maximum relief valve setting. The hydraulic fluid fill point shall be properly labeled. The hydraulic fluid shall comply with the requirements of MIL-PRF-83282.

3.15.1 External leakage. During all testing, the degree of external hydraulic system leakage shall not exceed a Class 3 for dust free conditions and a Class 3 D for dusty conditions of SAE J1176. External hydraulic system leakage shall not exceed a Class 3 for production trucks under normal operation.

3.15.2 Hydraulic reservoir. The hydraulic reservoir filler shall be of sufficient inside diameter to accept a filler tube of at least 1.56 inches outside diameter.

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3.15.3 Fail-safe hydraulic lift system. The truck shall be equipped with a fail-safe hydraulic lift system which will automatically prevent load lowering and fork forward tilting in the event of electrical, hydraulic or pneumatic failure; hydraulic or pneumatic failure includes any component, line or hose. Check valves have been used in the past to prevent load lowering. Pressure relief valves or regulators shall be provided in the hydraulic and pneumatic systems to prevent overpressure. In addition, a means shall be provided to manually override the system to allow safe and slow lowering (not more than 10 feet per minute) of loaded or unloaded forks.

3.15.4 Hydraulic schematic. The hydraulic schematic shall be provided on a durable material and should be stored in the cab. For example: A book with hard plastic pages (tear resistant & smear resistant).

3.16 Brakes.

3.16.1 Service brake. Full air, air-over-hydraulic, or hydraulic-over-hydraulic type, foot controlled, service brakes shall be provided. The service brakes shall stop the truck with rated load, within the distance specified in the Stopping Distance Method of ANSI/ITSDF B56.6, with not more than 80 pounds of force on the brake pedal. The service brakes shall meet the Drawbar Drag Method of ANSI/ITSDF B56.6, except a drawbar drag equal to 25 % of truck gross weight shall be produced with not more than 80 pounds of force on the brake pedal.

3.16.2 Parking brake. The parking brake actuation shall be independent from the service brakes. The control shall be located within reach of the seated operator and in a position to permit easy and safe movement on and off the vehicle. Not more than 35 pounds of force shall be required to apply the parking brake. The parking brake shall hold the truck with rated load on a 20% grade in both the forward and reverse direction.

3.17 Electrical components and circuits. The electrical system shall consist of all electrical components necessary for operation of the truck. The forklift shall have sufficient electrical grounding to prevent static discharge.

3.17.1 Battery. Except when Type A Winterization (see 3.20.1) is specified (see 6.2), the battery(s) shall be the maintenance-free type. Electrical system voltage shall be 12 volts.

3.17.2 Electrical disconnect switch. A keyless master switch, with an identification plate, shall be installed in a convenient location to permit disconnect of the battery from all electrical load.

3.17.3 Ignition switch. A key operated ignition switch shall be furnished. It shall have not less than three positions; off, on and start. The ignition switch shall not activate the engine starter while the engine is running, nor when the engine is not running and the transmission is in any forward or reverse gear.

3.17.4 Alternator. The alternator shall have sufficient output at normal engine operating RPM to supply full electrical operating load, including all lights, and still provide electrical current to charge the battery.

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3.17.5 Wiring schematic. The wiring schematic shall be provided on a durable material and should be stored in the cab. For example: A book with hard plastic pages (tear resistant & smear resistant).

3.18 Instruments. In addition to the instruments supplied on the standard commercial forklift, an hour meter shall be installed in the instrument panel. All instruments, except the hour meter shall be lighted when the front floodlights (see 3.19) are illuminated.

3.19 Lighting. The truck shall be provided with not less than two flood lamps for forward illumination and not less than two flood lamps for rearward illumination. The manufacturer shall make available an additional floodlight that is adjustable from the operator's compartment. Front flood lamps shall be adjustable. Tail light(s), and brake stop light(s) shall be installed. All lights shall be protected by location or guards. Individual operator controlled switches shall be provided for the front lights, the rear lights, and the adjustable light.

3.20 Winterization. (Minimum Requirements).

3.20.1 Type A winterization. When specified (see 6.2), the truck shall be furnished with Type A winterization that shall protect to -65° F and shall consist of the following:

3.20.1.1 Power plant heaters. Engine coolant, engine oil and battery heaters shall be provided. All heaters shall operate on either (110 volts @ 60 Hz) or (220 volts @ 50 Hz) alternating current. A three wire, 25 feet long weatherproof cable of adequate capacity for all heaters being used simultaneously shall be provided. The cable shall be able to connect to NATO and American connectors. A stowage place shall be provided on the truck to keep the cable when not in use. The heaters shall be as follows:

a. The coolant heater shall be installed in the engine block or lower coolant inlet hose. A coolant circulating pump, driven by a 110 volt or 220 volt alternating current motor shall be provided when a coolant inlet hose heater is furnished. The heater shall have adequate capacity to maintain engine coolant at a temperature of 10° F in an ambient temperature of -65° F. It shall be controlled to limit engine coolant to not more than 150° F.
b. An engine oil heater with adequate capacity to maintain engine oil at a temperature of at least +10° F in an ambient temperature of -65° F shall be furnished. It shall be controlled to limit engine oil temperature to not more than 150° F.
c. A battery heater shall be provided. It shall have adequate capacity to maintain battery electrolyte at a temperature of at least +10° F in an ambient temperature of -65° F, and shall have a thermostat to limit temperature of the electrolyte to not more than +80° F.

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3.20.1.2 Cab. A cab that is either removable from, or integral with, the overhead guard shall be provided. If the cab is removable, a cab-lifting device shall be provided. Any connections that must be separated for cab removal shall have quick disconnects with covers. Thermal insulation shall be installed on the floor, cab sidewalls and cab ceiling, with washable covering over all insulation. Boots are required for insulation to close all openings where attachments and controls enter the cab. There shall be windshield wipers on the front windshield, and rear and roof windows. The cab shall be equipped with two fully opening doors or one fully opening door and one emergency exit. Each door shall have a safety latch and a hold open catch. The cab shall be equipped with an adjustable ventilation fan, not less than 6 inches in diameter. When specified (see 6.2), the truck shall be equipped with any of the following options. These options: (a) Rear window sunscreen (b) Front sun visor and/or (c) external rear view mirrors, shall not interfere with the requirements in ANSI/ITSDF B56.6

3.20.1.3 Heater and defroster. The heater shall be of sufficient capacity to maintain a temperature of +40° F at cab floor level in an ambient temperature of -40° F.

3.20.1.4 Cold starting aid. A starting aid such as a measured shot ether injection system shall be furnished to allow -65° F starting.

3.20.1.5 Anti-freeze engine. To protect the engine from freezing, the coolant system shall be protected to -65° F with antifreeze.

3.20.2 Type C winterization. When specified (see 6.2), the truck shall be furnished with Type C winterization that shall protect to -25° F and shall consist of the following:

3.20.2.1 Starting aid. A starting aid such as a measured shot ether injection system shall be furnished to allow -25° F starting.

3.20.2.2 Cab. The cab shall meet the requirements of (see 3.20.1.2).

3.20.2.3 Cab heater and defroster. The heater shall have sufficient capacity to maintain a temperature of at least +40° F at cab floor level in an ambient temperature of -20° F.

3.20.2.4 Anti-freeze engine. To protect the engine from freezing, the coolant system shall be protected to -25° F with antifreeze.

3.21 Maintainability. Provisions shall be made for adjustment, servicing, and replacement of all electrical assemblies and components, hydraulic system components, battery, wearing parts of lift and tilt mechanism, brakes and components, wear parts of steering assembly, tires, wheels, lights, and horn. If hand access openings are required to perform maintenance, the edges of each opening shall be smooth, the opening shall be provided with a removable or hinged cover, and the dimensions should accommodate a mittened hand. The engine hood shall be capable of being opened by one man using one hand and shall be securely held open by a counterbalance or positive locking device.

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3.21.1 Maintenance operations. The forklift shall be capable of being mechanically maintained by one person not to exceed 1 hour using common tools except where otherwise specified (see 6.2). The following items are provided as examples:

a. Remove, replace and adjust all engine-driven belts - 3/4 hour.
b. Remove and replace alternator - 3/4 hour.
c. Remove and replace all hydraulic system filters, screens, and strainers - 1 hour.
d. Remove and replace engine coolant system hoses - 1 hour.
e. Drain engine oil, remove and replace engine oil filter, and refill crankcase - 1/2 hour.
f. Remove and replace fuel filter elements - 1/2 hour.
g. Remove, replace and connect battery - 1/2 hour.
h. Drain transmission fluid, remove and replace all transmission filters and refill transmission - 1 hour.
i. Remove and replace starter - 1 hour.
j. Bleed and adjust brakes and refill master cylinder (if applicable), 2 men - 1 hour.
k. Remove and replace floodlights and taillight bulbs - 1/4 hour each bulb.
l. Lubricate all lubrication fittings with 2 strokes per fitting - 1 hour.

3.21.2 Special tools. The contractor shall supply any special tools or equipment peculiar to, and only used on this forklift. One set of tools is required for each truck. The manufacturer will provide a means of storing these tools on the vehicle when not in use.

3.21.3 Lubrication. Means shall be provided to lubricate all moving parts that require lubrication, except where sealed permanent lubrication is provided. Fittings shall be accessible to a standard, commercial, grease gun, equipped with a 10-inch flexible extension. Accessibility to fittings shall be provided without the removal of accessories or parts. Panels and plates equipped with hand-operated fasteners may be removed to provide accessibility. Each forklift shall be serviced and run-in with lubricants standard to the contractor's commercial practice. A lubrication schedule shall be provided on a durable material and stored in the cab. For example: A book with hard plastic pages (tear resistant & smear resistant).

3.22 Tires and tire loadings. Tire loadings shall not exceed the values specified by the tire manufacturer or the Tire and Rim Association Yearbook. The truck shall be equipped with pneumatic tires with an off-road tread pattern. All tires shall be new and of same rated size and construction. Tires shall be not more than 12 months old on date of acceptance by the Government.

3.22.1 Wheels. Wheel rims shall be in accordance with the Tire and Rim Association (T&RA) Yearbook and all rims on the truck shall be the same size.

3.23 Rearview mirror. The truck shall be equipped with an adjustable rearview mirror mounted within the operator's field of view as described in SAE J985. The exact mounting location shall be determined by the manufacturer and shall increase the driver's field of vision.

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3.24 Data plate. A corrosion resistant plate shall be permanently installed on the instrument panel, or another visible protected location. The following information shall be on the plate:

Nomenclature
Make and model
Manufacturer's serial number (VIN)
Registration number
Asset NSN number
Vehicle curb weight (lbs)
Payload, maximum (lbs)
Gross weight, max (lbs)
Gross weight combined, max (lbs)
Date of delivery
Warranty month miles
Contract number
US Property

3.25 Painting. All external surfaces and all surfaces normally painted by the truck manufacturer shall be prepared and primed using material compatible with the final paint. Zinc-rich primers shall be used when possible. The paint finish shall show no evidence of uneven application, curtains, runs snags, orange peel, lack of adhesion, or other defects. The final top-coat shall be the manufacturer's standard commercially available polyurethane. Any deviations from the polyurethane coating system shall be cleared by WR-ALC 542 CSW/CBSG prior to use.

3.25.1 Green. When specified (see 6.2), the final paint shall be Forest Green, Color Number 24052 of FED-STD-595.

3.25.2 Desert sand. When specified (see 6.2), the final paint shall be no-gloss tan, color number 30313 of FED-STD-595.

3.26 Marking. Markings must be made with paint. Markings for green trucks shall be black paint, and desert sand trucks shall be white paint. The following markings shall be applied in the indicated locations:

a. Vehicle capacity ("25,000 POUNDS") in 1-1/2 inch high letters on each side of the mast, or front of truck.

b. "NO RIDERS" in 2 inch high letters on each side of truck.

3.27 Rustproofing. When specified (see 6.2), tropical rustproofing shall be provided. This should be considered a premium rustproofing package usually consisting of an additional coating. The truck shall be treated with a corrosion preventative compound complying with A-A-59295. Many of these vehicles are used in tropical/coastal environments and experience high humidity and salt spray. Therefore, they usually exhibit high levels of corrosion in the areas listed below. At a minimum, these areas shall be coated.

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1. Cab, interior
2. Cab, exterior
3. Seams
4. Welds
5. Hidden recessed areas
6. Locations where dissimilar metals come in contact
7. Area above fuel tank(s)
8. Engine oil pan & transmission oil pan
9. Radiator support structure
10. Battery box

3.28 Emissions. The vehicle emissions shall comply with the EPA regulations in effect at the time of vehicle manufacture. When there is a change in EPA regulations during a contract, EPA provisions shall be consulted to determine which regulations apply (e.g. TIER 1 or TIER 2 or TIER 3).

3.29 Noise limits. The sound level measured at the operator's station shall not exceed 84 dB(A). If the sound level is above 84 dB(A), the contractor shall provide a hazardous noise warning plate stating that operator's hearing protection is required when operating this truck. The plate shall be made of a corrosion resistant material and shall be at least 4.0 inches square. It shall have black lettering on a yellow background and shall be located to be visible to the operator as he enters the cab, or is seated. Sound level shall not exceed 92 dB(A).

3.30 Slinging and tie-downs. Permanently installed slinging and tie-down devices, that enable the truck to be lifted in its normal travel position, and to be tied down to the floor of a transportation medium shall be provided. All devices should be easily accessible and minimize the need to crawl under the vehicle when securing it. All devices shall be capable of accepting a chain and hook with an outside diameter of 3.00 inches through its opening, and shall have a structural safety factor of 2.3 to 1, based on static load. The notation "LIFT HERE" or "TIE-DOWN" shall be stenciled in black paint near each lifting and tie-down device. The manufacturer shall submit digital drawings (in Tagged Image File Format, or TIFF) showing the center of gravity location in air-transport mode and tie down instructions on C-130, C-5, and C-17 aircraft. There shall be a corrosion resistant, metal plate permanently installed on the vehicle that shows the center of gravity location in the air-transport mode, and tie-down instructions in C-130, C-5 and C-17 aircraft. Refer to MIL-HDBK-1791 as a guide only.

3.31 Transportability. The forklifts shall be capable of being transported by water, highway and rail without significant restrictions. The trucks shall be air-transportable in C-130, C-5 and C-17 aircraft. The truck may require minimal disassembly to meet the overall height and axle weight requirements; however, it shall be capable of being driven on and off the aircraft. Each axle shall weigh not more than 13,000 pounds with at least 1/4 tank of fuel. To meet the air transportability requirements, refer to MIL-HDBK-1791 as a guide only. The manufacturer shall preload the finished forklift in a C-130 to verify the fit and tiedown procedures.

3.32 Electromagnetic interference (EMI). The truck shall comply with the EMI requirements shown in table I.

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TABLE I. Electromagnetic interference (EMI)

Name	Description	Parameters
MIL-STD-464	Compatibility	N/A
RE-102	Emissions	(Frequency Range: 2 MHz to 18 GHz)
RS-103	Susceptibility	(Frequency Range: 30 MHz to 18 GHz) 10 V/m (30 MHz to 200 MHz) 50 V/m (above 1 GHz)

3.33 Uprights and Carriage. Uprights, when furnished, shall be of the telescopic, roller type. Rollers shall be of the permanently lubricated for life type or equipped with lubrication fittings. The drive tires shall not interfere with the uprights or the carriage assembly travel at any upright tilt angle. The lift cylinder shall be mounted and positioned so that it does not protrude forward of the plan outline of the uprights. Uprights and carriage assembly shall be removable from the truck without requiring permanent modification (such as cutting or welding) to the truck. Cross members of the mast structure, when in a lowered position, shall not interfere with the operators horizontal or downward line of sight to the front of the truck. The collapsed mast height with no load on forks, measured from the ground to the top of the uprights, in a vertical position, shall not exceed 102 inches. Positive means shall be provided to prevent over travel of the carriage or channel in both upper and lower positions.

3.33.1. Load backrest. A metal backrest starting not more than 6 inches above and extending at least 72 inches above the horizontal load carrying surfaces of the forks shall be provided. Load securing rings or eyes shall be provided on both left and right sides of the backrest and located 18 to 24 inches above the horizontal load carrying surfaces of the forks. The load securing device, when not in use, shall not extend forward of any surface on front face of backrest. Ring or eye opening shall be determined using MIL-STD-209. Safety factor for these load-securing devices shall be not less than 3 to 1 based on yield strength, when a forward horizontal load of 25,000 pounds is applied. The load shall be divided equally between all load-securing devices.

3.34 Towing device. A rear mounted drawbar pin shall be provided. The drawbar pin shall be located on the vertical centerline of the truck not less than 22 inches nor more than 30 inches above ground level. The pin shall be capable of accepting a round lunette with an inside diameter of 3.00 inches, and an outside diameter of 6.25 inches. The lunette shall have a circular cross section of 1.62 inch diameter. The drawbar pin mounting shall be of sufficient strength to withstand, without permanent deformation or damage, a drawbar pull of at least 3 times the maximum drawbar pull of the truck.

3.35 Performance.

3.35.1 Slope ascension. The truck shall be able to perform the following requirements on both dry concrete and a dry dirt surface.

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3.35.1.1 Longitudinal slope. The truck, with rated load, shall be capable of ascending and descending a 20 % slope (11.3°) at a minimum of 2 mph when the load is in the uphill direction during both ascent and decent. It shall also be capable of accelerating upslope from a complete stop to at least 2 mph on a 20 % slope (11.3°).

3.35.1.2 Lateral slope. With rated load on the forks, the truck shall be capable of full circle operation, in both directions, at maximum steer angle, at a speed of not less than 2 mph, on a 15 % slope (8.5°).

3.35.2 Fork tilt. When unloaded, forks shall have at least 10.0 degrees of forward tilt, and not less than 15.0 degrees of rear tilt.

3.35.3 Collapsed mast height. If designed with a mast, the collapsed mast height of a truck with no load on the forks, measured from the ground to the top of the uprights in a vertical position shall not exceed 102 inches.

3.35.4 Maximum fork height. The fork height of a truck with rated load, with the uprights fully extended, and the forks horizontal, measured from the ground to the load-carrying surface of the forks at the capacity load center, shall be not less than 130 inches.

3.35.5 Dimensions. The overall truck height, with mast collapsed, shall not exceed 102.0 inches. The overall width of the truck, at the widest point, shall not exceed 102.0 inches. The maximum length including the forks shall be 360.0 inches.

3.35.6 Under clearance. The ground clearance of the forklifts shall not be less than 12.5 inches and shall apply with the forklifts fully fueled and serviced, with and without rated load. The forklifts with and without load, shall be capable of negotiating a 20 degree ramp with level surfaces at both top and bottom of the ramp. No portion of the forklifts other than the tires, shall come in contact with the ramp when the forklifts travel over the ramp in either direction.

3.35.7 Fork dimensions. The fork length shall be 96.0 (±1.0) inches. The width shall be 10.0 inches maximum. The thickness shall be 3.0 inches maximum. The taper shall be on the underside of the forks and shall be not less than 30 inches long measured from the tip of the fork. The fork tips shall be chamfered or rounded to break corners and provide smooth edges. The fork tip shall be not more than 5/8 inch thick.

3.35.8 Fork spacing. A hydraulically powered fork positioner shall be furnished and controlled by the operator while seated. The fork positioner shall be capable of spreading the forks at least 84 inches when measured center to center of the forks. It shall be capable of closing the forks not more than 22 inches apart when measured center to center of the forks.

3.35.9 Side shift. The forks shall be capable of side shifting the rated load at least 6 inches each side of center (12 inches total travel).

3.35.10 Lifting speed. Lifting speed with rated load on forks shall be at least 55 feet per minute (fpm) over the entire distance from ground level to maximum fork height.

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3.35.11 Lowering speed. Speed of lowering of unloaded forks shall not be less than 30 feet per minute over the entire distance from maximum fork height to ground level. Speed of lowering forks with rated load shall not be more than 80 feet per minute over the entire distance from maximum fork height to ground level.

3.35.12 Turning radius. The maximum turning radius of the truck, measure to outside of the tires, shall be 300 inches.

3.35.13 Travel speed. While carrying the rated load on a level and flat surface, trucks shall be capable of attaining a speed of at least 15.0 mph in both forward and reverse directions.

3.35.14 Truck operations. The truck shall complete not less than 3 circuits per hour, for a cumulative total of 100 hours, when tested as specified in (see 4.5.33). Only routine maintenance as prescribed by the manufacturer is allowed and only at the end of each operational period. The truck shall show no signs of unusual or detrimental wear. No failure shall occur during the 100 hour operational test. A failure is defined as any malfunction that cannot be corrected within 30 minutes by adjustment, repair or replacement, which may cause cessation of operation, degradation of performance capabilities below specified levels, damage to the truck by continued operation, or personnel safety hazard.

3.35.15 Fork visibility. With no load on the forks, the operator without leaving the seat and while maintaining full control of the truck shall be able to see at least one fork tip at any fork height, fork tilt, or fork spacing when the mast in the straight ahead position. The operator must remain seated, but may lean if necessary, to see the tip. Also, the truck manufacture shall have a side-view of the truck showing sight lines for a 95th percentile male and a 5th percentile female. The manufacture shall furnish a copy of this drawing as part of the first article inspection report.

3.35.16 Drift. The lift assembly shall be capable of holding the rated load at maximum lift height for 60 minutes with not more than 0.5 inch of vertical drop, and for 10 minutes with not more than one degree of rotation of the forks.

3.35.17 Stability. The truck shall meet the longitudinal stacking, longitudinal travel, lateral stacking, and lateral travel stability requirements of ANSI/ITSDF B56.6. With rated load on forks, mast vertical, and the heel of the forks 24 inches above ground, the rear axle weight shall be at least 13% of the Gross Vehicle Weight (GVW) of the forklift.

3.36 Air Compressor. When specified (see 6.2), the truck shall be equipped with an auxiliary air compressor equal to or better than the electrical air compressor from Gast Manufacturing Co., Model 3HBB-19-M323. The compressor shall be equipped with a universal air coupler.

3.37 NATO Plug. The truck shall be equipped with a NATO Plug equivalent to NSN 5935-01-044-8382.

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3.38 Nuclear Certification Testing. If one of the following conditions is met then the forklift (only applies for Nuclear Certification) must undergo a full first-article test process outlined in section 4:

1. The manufacturer has not previously produced such a forklift for the Air Force.
2. The forklift has not been previously purchased by the Air Force.
3. The forklift had been upgraded/modified in any way to affect Form, Fit, or Function from previous production models on contract.
4. The forklift has not been purchased within a 60 months time frame from a previous first article test. Assuming the forklift has not changed from the configuration that had been previously tested.

4. VERIFICATION

4.1 Classification of inspections. The inspections shall be classified as follows:

a. First article inspection (see 4.2).
b. Conformance inspection (see 4.3).

4.2 First article inspection. The first article shall be submitted in accordance with (see 3.2). The first truck and its components, contractor drawings and literature, and vendor literature shall be compared to section 3 of this document to verify conformance. Unless otherwise specified (see 6.2) the truck shall then be subjected to the conformance inspection specified in (see 4.3).

4.3 Conformance inspection. Unless otherwise specified (see 6.2), the following conformance inspection may be performed in any order, as determined by the contractor. Occurrence of any of the following conditions during the testing specified (see 4.3.1 thru 4.3.28) shall be cause for rejection of the truck:

a. Inability to meet specified performance requirements or inability to complete any test.
b. Permanent deformation, over-heating, malfunctions, leakage of water, transmission fluid, engine oil, fuel, lubrications, hydraulic fluid, etc, in excess of Class 3, for dust free conditions and Class 3D for dusty conditions in accordance with SAE J1176.
c. Any binding, jerking, or uneven operation of any component or system.
d. Any wearing, galling, gouging or other material removal.

4.3.1. Conformance testing and demonstration. Unless otherwise specified herein, demonstrations and tests shall be conducted at the ambient temperature and climatic conditions existing at the place of demonstration and test. Only that maintenance scheduled by the contractor and submitted as a maintenance schedule prior to commencement of the demonstration and test shall be performed during the demonstration or testing. All distance and time measurements, and other required data obtained during the testing shall be recorded and included in the first article test report.

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4.3.2 Fail-safe hydraulic lift system. Raise the rated load 4 to 10 feet above ground level with the mast approximately vertical. Measure vertical distance to one fork tip. Disconnect a hydraulic line that supplies pressure to the lift system to simulate a line failure. When fluid stops draining, remeasure vertically to same point on fork tip. A drop of more than 0.5 inch shall be cause for rejection. Measure the mast tilt. Disconnect the hydraulic lines that supply pressure in both directions, to all tilt cylinders. When fluid stops draining, remeasure mast tilt. A change of more than one degree shall be cause for rejection. Lower the forks to ground level using the override system.

4.3.3 Overload. Place truck on level surface and support it with blocks under the axle or frame to relieve the load on the tires. Secure the truck to the floor in a manner to compensate for the additional test load. The cylinders may be hydraulically locked for this test. With the mast in straight ahead position gradually apply load to the forks until three times the rated capacity (75,000 pounds at 48 inch horizontal and vertical load center) is on forks. Leave this load on the forks for at least 10 minutes. Remove load and inspect truck structure, frame, mast assembly and hydraulic system for deformation, cracks, broken welds, hydraulic system leaks, etc. Inspect forks at least six inches each side of heel by magnetic particle method.

4.3.4 Fork lifting overload. The forks shall be loaded with 125 percent of the rated load (31,500 pounds at 48 inch horizontal and vertical load center), and the truck shall be tied down to prevent overturning. The load shall begin two inches above the ground level with the mast vertical, and this position shall be called waterline 2.0. The load shall be fully side shifted left and right and returned to the center position. The load shall be raised to maximum lift height. The load shall be fully side shifted left and right and returned to the center position. The mast shall be fully tilted forward and backward and returned to the vertical position. The load shall be lowered to waterline 2.0. This shall be considered one cycle. This cycle shall be repeated 50 times. Since this is a severe use of the hydraulic system, the lifting and side shifting may be stopped as needed to allow cooling of the hydraulic fluid. The occurrence of any condition listed in (see 4.3) shall be cause for rejection.

4.3.5 Service brakes. Perform the drawbar and stopping distance service braking tests specified in ANSI/ITSDF B56.6 as modified by (see 3.16.1). Nonconformance shall be cause for rejection.

4.3.6 Parking brake. Drive the truck forward, while carrying rated load, onto a 20% ramp. Measure the force at the handle required to fully apply the parking brake. Using only the parking brake, hold the truck for 2 minutes. Repeat this test, except test with the truck up the ramp in reverse. The truck may be driven up on the ramp in reverse with no load on the forks and the load applied with the truck stationary on the ramp. Any movement of the truck while the parking brake is applied shall be cause for rejection. Nonconformance with (see 3.16.2) shall be cause for rejection.

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4.3.7 Cold starting. Place the truck in an ambient temperature of –25 degrees F or cooler, until all components are stabilized at the ambient temperature. The engine shall start within five minutes and run smoothly at idle speed without continued engine control adjustment within 15 minutes. At this time all travel, braking, and load handling mechanisms, shall be operated. The forks shall be raised to maximum lift height allowed by the test chamber and side shifted and adjusted laterally between extreme positions. Starting aides such as the ether injection or glow plugs furnished with the truck may be used to assist starting; however, no external power or heat source shall be used. The test chamber shall maintain the ambient temperature as close to –25 degrees F as possible during the entire test. Failure to meet any of these requirements shall be cause for rejection.

4.3.8 Emissions. The manufacturer shall provide a letter certifying the vehicles conform to the EPA regulations in effect at the time of manufacture. If the emissions regulations change during production, a subsequent certification letter must be provided.

4.3.9 Noise level. Measure noise level at operator's ear with the engine operating at maximum rpm and while lifting rated load. Nonconformance with (see 3.29) shall be cause for rejection. If noise level is between 84 and 92 dB(A), the noise warning plate described in (see 3.29) shall be on all trucks delivered on this contract.

4.3.10 Slinging and tiedown provisions. Test the slinging provisions by applying the load for the time period specified in MIL-STD-209. Test the tiedown provisions by applying the ultimate load for the time period specified in MIL-STD-209. Nonconformance to (see 3.30) shall constitute failure of this test.

4.3.11 Air transportability verification. Using the air transportability information, verify that the truck can meet all air transport requirements. Weigh front and rear axles with the forklift in air transport configuration and at least 25 percent of a full fuel tank. Measure the overall height, and any other dimensions needed to verify the air transport requirements. For reference only refer to MIL-HDBK-1791. Nonconformance to (see 3.31) shall constitute failure of this test.

4.3.12 Electromagnetic interference (EMI). Test the truck to verify that it meets the EMI requirements of (see 3.32). Failure to meet these requirements shall be cause for rejection.

4.3.13 Load securing devices. Apply a total forward, horizontal load of 3 times rated capacity (75,000 pounds divided equally between all load securing devices (see 3.33.1). The load shall be applied for 5 minutes. Any deformation, broken welds, etc. shall be cause for rejection.

4.3.14 Towing device. Apply a total rearward, horizontal load of 3 times rated the GVW of the truck for a minimum of 5 minutes. Nonconformance to (see 3.34), deformation, broken welds, etc. shall be cause for rejection.

4.3.15 Slope ascension. The tests (see 4.3.15.1 and 4.3.15.2) shall be performed on both dry concrete and a dry dirt surface.

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4.3.15.1 Longitudinal slope. Drive the truck forward with rated load along a horizontal approach and onto a 20% slope and bring to complete stop. Start from a dead stop and proceed up the ramp. Remove rated load and repeat above test. Nonconformance to (see 3.35.1.1) shall be cause for rejection.

4.3.15.2 Lateral slope. Drive the truck with rated load onto a hill with a slope specified in (see 3.35.1.2), and perform two complete forward circles in a clockwise direction, at maximum steer angle. Repeat by driving forward in counterclockwise direction. Repeat in both clockwise and counterclockwise directions, but in reverse. Repeat all of these tests, but with no load on the forks. Inability to negotiate the slope, any wheel or wheels leaving the ground, any leaks or appearance of lack of lubrication shall constitute failure of this test.

4.3.16 Upright tilt. Place truck without load on flat level surface. Raise forks to an elevation of 2 to 4 feet. Tilt forks to full forward position and record angle of tilt. Tilt forks to full rearward position and record angle of tilt. Nonconformance to (see 3.35.2) shall be cause for rejection.

4.3.17 Collapsed mast height, maximum fork height, dimensions, and under clearance. With the vehicle on a level and flat surface, no load on the forks, and mast in true vertical position, measure and record collapsed mast height, the overall truck height (with mast collapsed), and the overall truck width. With the vehicle on a level and flat surface, rated load on the forks, and mast in true vertical position, measure and record maximum fork height and under clearance. Nonconformance to (see 3.35.3, 3.35.4, 3.35.5, or 3.35.6) shall be cause for rejection.

4.3.18 Fork dimensions. Measure the length, width, and thickness of the fork tines to determine compliance with (see 3.35.7).

4.3.19 Fork spacing. With no load on the forks, move forks together to the most closed position. Measure to centerlines of forks. Move forks to most spread apart position and measure to centerlines of forks. Nonconformance with (see 3.35.8) shall be cause for rejection. The occurrence of any condition listed in 4.3 shall be cause for rejection.

4.3.20 Fork side shift. With no load on the forks, side shift to extreme left position. Side shift to extreme right and measure total travel. Nonconformance with (see 3.35.9) shall be cause for rejection. With the rated loads on the forks the side shift shall be operated through 100 complete, continuous cycles. A cycle shall consist of starting at extreme right, side shift to extreme left, then side shift back to extreme right. The occurrence of any condition listed in 4.3 shall be cause for rejection.

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4.3.21 Lifting speed and lowering speed. With the forklift on a level and flat surface, measure and record the distances and times (inches and seconds) shown below. Repeat the procedure three times. Nonconformance to (see 3.35.10 or 3.35.11) shall be cause for rejection.

a. Dimension from floor to top surface of forks in fully lowered position.
b. Time required raising rated load to maximum fork height.
c. Dimension from floor to top surface of forks raised to maximum fork height.
d. Difference between maximum fork height and height of the forks in lowered position.
e. Time required to lower rated load at maximum speed (full open lowering control) to an intermediate fork location (between 3 to 4 foot height). The load shall be abruptly stopped at this intermediate fork location.
f. Dimension from the floor to the intermediate fork location.
g. Difference between maximum fork height and height of forks in the intermediate fork location.
h. Time required to lower unloaded forks from maximum lift height to lowered position.

4.3.21.1 Fork lifting mechanism. The fork lifting mechanism shall be operated through 100 complete continuous cycles (from ground level to maximum lift height and back to ground level) with no load and 200 cycles with rated load on the forks. The test shall be performed at a rate of not less than two cycles per minute. Any failures to lift mechanism components, overheating of engine coolant system or hydraulic system, inability to complete the test or any other failure shall be cause for rejection.

4.3.22 Turning radius. With rated load on forks, operate truck in clockwise direction, at maximum steering angle, for at least one complete full circle. Determine turning radius by measuring to outside of tires. Repeat in counterclockwise direction. Nonconformance with (see 3.35.12) shall be cause for rejection.

4.3.23 Travel speed. Operate the truck at maximum governed speed in both forward and reverse directions with rated load in the load carry position. In ability to obtain the speed specified in (see 3.35.13), failure of any component, over-heating, malfunctioning, or leaking of fluid shall be cause for rejection.

4.3.24 Truck operations. Perform Test Method No. 1, Truck Operations (see figure 2). Nonconformance with (see 3.35.14) shall constitute failure of this test.

4.3.25 Fork visibility. With no load on the forks, vary the lift height, side shifting, fork spacing and mast pivoting to verify compliance to the visibility requirements of (see 3.35.15).

4.3.27 Drift. Exercise the lift and tilt functions to heat the hydraulic fluid to operating temperature. Raise the rated load to maximum lift height with mast approximately vertical. Measure vertical distance from ground to bottom of load at the 24-inch load center. Measure mast tilt from vertical. Shut off engine and let sit for 10 minutes. Remeasure vertical distance to same point on bottom of load. Remeasure mast tilt. Nonconformance with the drift requirements of (see 3.35.16) shall be cause for rejection.

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4.3.28 Stability. Perform applicable stability tests of ANSI/ITSDF B56.6 specified in (see 3.35.17). Inability to pass the ANSI/ITSDF B56.1 tests shall be cause for rejection.

4.4 Production trucks inspection. All trucks produced by the contractor shall be inspected and subjected to the tests contained in (see 4.4.1, 4.4.2, and 4.4.3). Occurrence of any of the conditions listed in (see 4.3) shall be cause for rejection.

4.4.1 Examination of product. The truck shall be examined to determine compliance with this document.

4.4.2 Travel. The truck shall be driven at least 1.0 mile at varying speeds, including maximum speed. At least five right and five left turns shall be made at maximum turn angle, and operate horn, windshield wipers, lights, heater, defroster, and other components during this one mile drive. Occurrence of any conditions listed in (see 4.3) shall be cause for rejection.

4.4.3 Material handling. With rated load on forks, raise forks to maximum light height, then lower at maximum lowering speed and quickly stop at one to two feet above ground level. Repeat at least five times. If the truck has side shift capability, side shift rated load form one extreme to the other and back to original position. Repeat at least five times. Occurrence of any conditions listed in (see 4.3) shall be cause for rejection.

5 PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the military service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6 NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. Trucks described herein are primarily intended for stacking, unstacking, and moving 20-foot International Standards Organization (ISO) containers, palletized loads and other large cargo. Operations will include, but not be limited to, loading and unloading flatbed trailers, loading docks, and C-130, C-17, and C-5 aircraft. The trucks will operate on hard paved surfaces, unprepared natural ground, rough terrain, mud, and soft sand. Traveling at maximum speed between work sites as far as five miles apart, both fully loaded and unloaded is also required.

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6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number and date of this specification
b. Specifications, standards, and handbooks, as specified (see 2.2.1)
c. When a first article is required (see 3.2)
d. Transmission oil cooler (see 3.13)
e. Battery(s) other then maintenance-free type, when specified (see 3.17.1)
f.. Type A winterization, when specified (see 3.20.1)
g. Rear window sunscreen, front sun visor, and/or external rear view mirrors. (see 3.20.1.2)
h. Type C winterization, when specified (see 3.20.2)
i. Maintainability as specified (see 3.21.1)
j. Final paint color, as specified (see 3.25.1 and 3.25.2)
k. Rustproofing, when specified (see 3.27)
l. Auxiliary air compressor (see 3.36)
m. NATO Plug (see 3.37)
n. First article inspection, if required (see 4.2)
o. When Conformance Inspection is required (see 4.3)
p. Packaging requirements (see 5.1)

6.3 Subject term (key word) listing.

Material Handling
Container Handling

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Cummins Engine Company, Inc.
Box 3005
Columbus, Indiana
47202-3005

October 1, [redacted]

[redacted]

Dear [redacted]:

Our B Series engines with the Bosch rotary pump maintain their ability to provide specified performance and durability on #2 diesel fuel. However, in using turbine fuels, such as JP-4, JP-5 and JP-8, the following may occur:

- The use of JP-4 (MIL-T-5624) will cause hot restarts and the fuel system components longevity is questionable. Also, there could be up to a 25 percent power loss.

- The use of JP-5 and JP-8 (MIL-T-83133 will cause some power reduction, (approximately 15 percent) due to their lower energy content vs. #2 diesel fuel. In addition, due to the reduced lubrication properties of lower viscosity fuels, there may be some fuel system life reduction.

Should you need additional information, please let me know.

Regards,

[redacted]

[redacted]

Manager - Government Business

Phone: [redacted]

[redacted]

FIGURE 1. Alternate Fuel Certification Letter.

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TEST METHODS NO. 1
TRUCK OPERATIONS

1. Demonstration course:

   a. The test course shall be a level, paved or unpaved surface laid out in accordance with Figure 3-A. Station 1 and Station 3 shall be platforms that are not less than 8 feet in height and capable of supporting rated load. Station 2 shall be at ground level.

   b. Obstacles shall be in accordance with figure 3-B and placed so that the nearest obstacle is 10 feet from Station 1.

2. Test procedure:

   (a) Initially place rated loads on platforms at Stations 1 and 3.

   (b) Pick up load from Station 1, back up truck being sure all wheels travel over obstacles. Travel forward and deposit load at Station 2.

   (c) Disengage load at Station 2. Back out and travel forward to Station 3. Prior to engaging load at Station 3, raise mast to maximum lift height to activate the relief valve. Lower forks and engage load.

   (d) Pick up load at Station 3. Back out, travel forward and deposit load at Station 1, being sure all wheels travel over obstacles.

   (e) Disengage load at Station 1. Back out, being sure all wheels travel over the obstacles. Travel forward to Station 2.

   (f) Pick up load at Station 2. Back out, travel forward to Station 3 and deposit load.

   (g) Steps 2(b) through 2(f) shall constitute one circuit. For 50 percent of the circuits, Stations 2 and 3 shall be interchanged so that they are in clockwise position rather than in their initial counterclockwise position. Stations shall be changed at the end of each 8 hour operating day.

FIGURE 2. Test methods No.1

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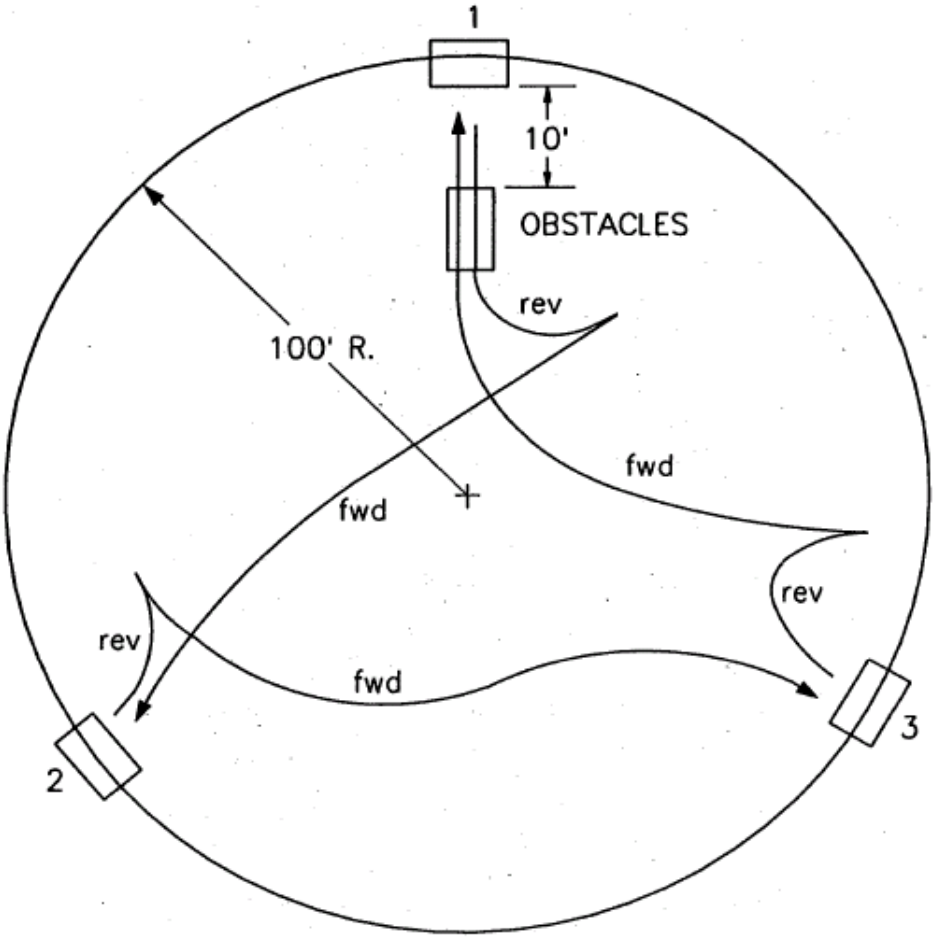

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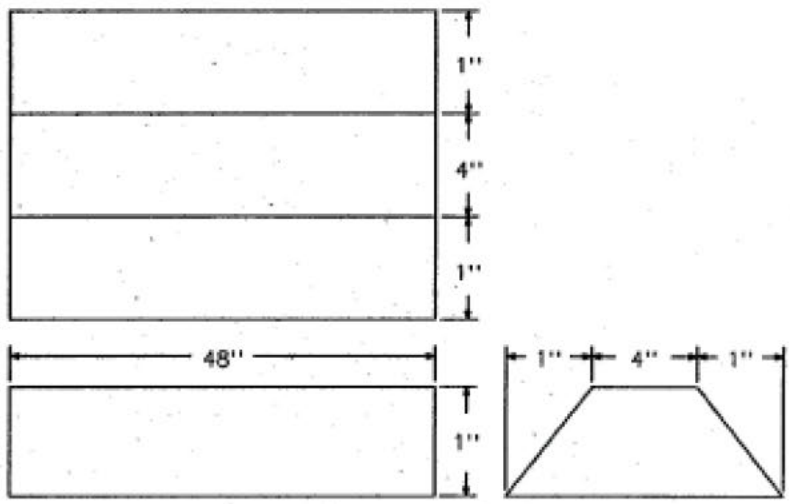
FIGURE 3-A. Truck operations course

CONSTRUCTION OF OBSTACLE S



OBSTACLE COURSE LAYOUT

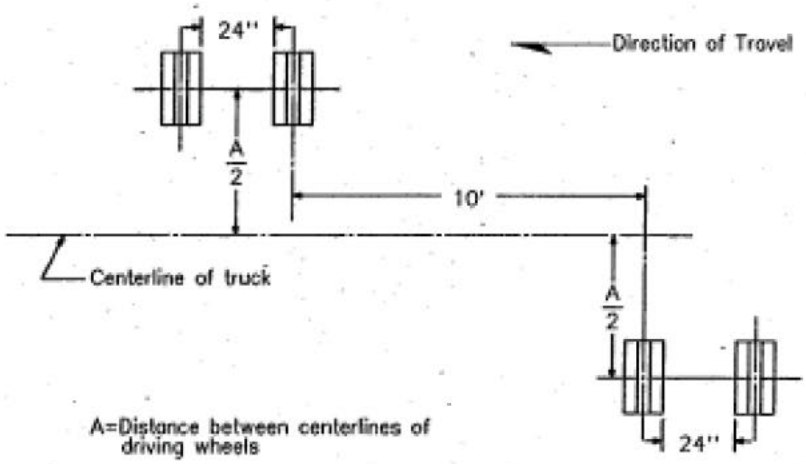


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FIGURE 3-B. Obstacles

Custodians:
Air Force – 84

Preparing activity:
Air Force - 84

Agent Activity:
Air Force – 99

(Project 3930-2009-001)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verity the currency of the information above using the ASSIST online database at http://assist.daps.dla.mil.